

Notice of Allowability

Application No.

10/523,490

Examiner

Henry S. Hu

Applicant(s)

FEIRING ET AL.

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment of May 24, 2007.
2. ☒ The allowed claim(s) is/are 1-12.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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DETAILED ACTION

1. This office action is in response to Amendment filed on May 24, 2007. **Claims 1 and 2 were amended; Claims 13-28 were previously cancelled, while no claim was added.** To be more specific, Claims 1 and 2 are both amended to remove "OH group" so that at least one of R^1 to R^{12} is O_2C-R^{13} . **Claims 1-12 are pending now with only one independent claim (Claim**

1). An action follows.

2. Claim rejections under Non-Final Office Action filed on January 25, 2007 are now removed for the reasons given in paragraphs 3-9 thereafter.

Allowable Subject Matter

3. Claims 1-12 are allowed.

4. The following is an examiner's statement of reasons for allowance: The above Claims 1-12 are allowed over the closest references:

5. The limitation of parent **Claim 1** in present invention relates to a fluorine-containing copolymer comprising two monomer units including: (A) a repeat unit derived from an ethylenically unsaturated compound having at least one fluorine atom covalently attached to

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an ethylenically unsaturated carbon atom; and (B) a repeat unit derived from an ethylenically unsaturated cyclic compound with specified factors as: (a) m is 0, 1, or 2; (b) R¹ to R¹² are independently from: (b1) H, (b2) halogen, (b3) carboxyl, (b4) OH, or (b5) O₂C-R¹³, wherein R¹³ is a C₁₋₂₀ hydrocarbon group and (c) the key point from this amendment is that at least one of R¹ to R¹² is O₂C-R¹³.

See other limitations of dependent Claims 2-12.

6. In view of the Applicants' amendment and detailed argument on page 4 of Remarks, 102 and 103 rejections relying on the sole use of Kobo as primary reference cannot stand as following:

As exactly pointed out by Applicants, Kobo is not preparing the claimed fluorinated copolymer comprising the claimed monomer having at least one of R¹ to R¹² is -O₂C-R¹³. In a very close examination, Kobo may have used a polycyclic olefin having a formula with at least one of R¹ to R¹² is OH or -COOH but not with -O₂C-R¹³. To be very specific, the functional groups used by Kobo are only related to other groups such as -OH, -CH₂OH, -COOH, -CN and the like (column 6, line 56-67).

7. One fact is that the claimed -O₂C-R¹³ ester group is "quite different" (as also pointed out by Applicants) from -COOR¹³ ester group or -COOH carboxylic acid group in view of its chemistry, reactivity and preparation. The other fact is that it may take tremendous

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synthetic effort to prepare such a functional group onto polycyclic ring at the desired position even the chemical structure is only different on one carbon or one position.

8. The secondary reference **Wheland** in the 103 rejection cannot fix the deficiency of Kobo. **Wheland** only teaches the use of a combination of two limitations such as using t-butyl acrylate as comonomer (see Example # 1 in paragraph 0103) and directly attaching a fluorinated alcoholic group or its protected substituents somewhere in the ring of polymer (paragraphs 0063-0066 and 0079). By doing so, such obtained fluoropolymers can be very useful for resist application (abstract, line 1-12; paragraphs 0003-0008). Therefore, a motivation to link is missing.

9. Additionally, the present invention has prepared in many examples along with some comparative examples for making such a functional group-containing fluorinated copolymer having such a polycyclic ring structure (see pages 16-25 for **Examples 1-19** with some control examples). Therefore, all the above-mentioned references, in combination or alone, does not teach or fairly suggest the limitations of present invention.

10. After further examination and search, the examiner found the following prior art did not teach the claimed limitation:

EP 1,246,013 A2 to Feiring et al. only discloses a process for the formation of photoresist by using a fluorinated copolymer having polycyclic rings (abstract, line 1-18;

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paragraphs 0010-0012). Although the ring structure (H) on page 10 at line 5-15 is reading on the claimed formula of parent Claim 1, it still does not carry the currently amended claimed limitation on R^1 to R^{12} , which requires at least one of R^1 to R^{12} to be $-O_2C-R^{13}$.

Therefore, Feiring fails to teach or fairly suggest the fluorinated copolymer of present invention.

It is noted that such an EP patent carries a later publication date of **October 2, 2002** in comparing with a priority date of August 19, 2002 for instant Application.

11. The key issue is to have the claimed **polycyclic monomer having at least one of R^1 to R^{12} is $-O_2C-R^{13}$** in the course of making functional group-containing fluorinated copolymer, cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

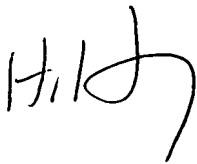
12. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the above references to render the present invention anticipated or obvious to one of the ordinary skill in the art. Therefore, the independent and parent **Claim 1** is allowed for the reason listed above. Since the prior art of record fails to teach the present invention, the remaining pending dependent **Claims 2-12** are passed to issue.

13. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is (571) 272-1103. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300 for all regular communications.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

Patent Examiner, Art Unit 1713, USPTO

August 10, 2007



DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700